

REMARKS/ARGUMENTS

Claim 19 has been canceled. Claims 18 and 20-38 are active in the case.

Reconsideration is respectfully requested.

The present invention relates to a process of preparing aqueous dispersions.

Claim Amendment

Claim 18 has been amended by incorporation of the limitation of Claim 19 therein.

Accordingly, the amendment does not introduce new matter into the case. Entry of the amendment into the record is respectfully requested.

Claim Rejection, 35 USC 112

The rejection of Claim 19 is obviated by its cancellation. The subject matter of the original claim(2) upon which Claim 19 is based refers to the amount of coagulate in the dispersion as produced. Withdrawal of the rejection is respectfully requested.

The rejection of Claim 24 is obviated by the amending language that has been incorporated into the claim, as well as by the corresponding amendment made to Claim 18 in describing the alcohol component of the emulsion as a long chain alkyl alcohol. Further, the dependency of Claim 32 has been corrected to Claim 30. None of the amendments introduce new matter into the case. Entry of the amendments is respectfully requested.

Claim Rejection, 35 USC 103

Claims 18-31 and 34-38 stand rejected based on 35 USC 103(a) as obvious over Hofmann, U. S. Patent 4,180,529 in view of De Witt, U. S. Patent 4,173,596. This ground of rejection is respectfully traversed.

The Hofmann '529 patent discloses a multi-layered graft acrylic polymer that is comprised of an elastomeric core formed of cross-linked acrylate, a non-elastomeric, relatively hard second layer of a cross-linked methacrylate polymer, wherein the methacrylate monomer may be copolymerized with optionally another monoethylenically unsaturated monomer, a third layer of elastomeric polymerized alkyl acrylate with optionally another monoethylenically unsaturated monomer, and a fourth layer non-elastomeric, relatively hard alkyl methacrylate polymer, wherein the methacrylate monomer is optionally copolymerized with another monoethylenically unsaturated monomer. However, another important aspect of the present invention as claimed is that a dispersion is produced by the polymerization process which contains a desirably relatively small amount of coagulate. In this regard applicants refer to the examples of the present specification which show product dispersions of low coagulate content. The coagulate content of the dispersion is important because coagulate present in the product dispersion adversely affects the characteristics of the core/shell copolymer impact modifier that is produced. The desired impact modifying characteristics of the core/shell copolymer are thereby reduced. On the other hand, the Hofmann patent contains no description of a product dispersion that has a low coagulate content; nor does the patent contain any description of the effect of coagulate produced in the dispersion on the properties of the resilient, acrylic graft polymer that is prepared.

The DeWitt patent discloses that the impact resistance of rigid polymeric resins is enhanced by incorporation of the polymeric toughening agent described therein in various polymer matrixes. However, as in the case of Hofmann, there is no description of a core/shell structured polymer product that is produced from a dispersion that has a coagulate content of any amount. Accordingly, the combined patents do not suggest the claimed process and other claimed categories of the present invention. Withdrawal of the rejection is requested.

Claims 18, 20, 21, 25-31 and 34-38 stand rejected based on 35 USC 103(a) as obvious over Hofmann, U. S. Patent 4,180,529 in view of Takarabe et al, U. S. Patent 4,914,142. This ground of rejection is respectfully traversed.

Applicants retain their position as stated above with respect to Hofmann that the patent does not show or suggest a low coagulate content dispersion.

The Takarabe et al patent does not overcome the deficiencies of Hofmann, and, in fact, is believed not to be germane to either the process disclosed in Hofmann or the present process. Nowhere does the reference teach or suggest a process of forming a core-shell, multilayer (meth)acrylate polymer, wherein the core stage of the multilayer polymer is formed in the presence of a seed latex. Rather, Takarabe et al discloses a method of producing an emulsion polymer by adding a polymerizable unsaturated monomer to an emulsion polymer comprised of a high mol wt. compound that does not contain a polyfunctional cross-linkable monomer or a chain transfer agent and which has a M_w mol wt. of 20,000 to 2,000,000 as a seed polymer. The monomer that is employed for polymerization is selected from a broad group of types as disclosed in columns 4 and 5 of the patent. The predominant polymerizable monomer disclosed in the examples is styrene. There is no teaching or suggestion of forming a multi-layered polymer dispersion, from which an impact modifier is derived, that contains a low amount of coagulate. Accordingly, withdrawal of the rejection is respectfully requested.

Claims 18, 20, 21, 24-31 and 34-38 stand rejected based on 35 USC 103(a) as obvious over Hofmann, U. S. Patent 4,180,529 in view of Morningstar et al, U. S. Patent 4,371,677. This ground of rejection is respectfully traversed.

Applicants retain their position as stated above with respect to Hofmann that the patent does not show or suggest a low coagulate content dispersion.

The Morningstar et al patent discloses a process for producing vinyl copolymer dispersions. In the process a vinyl- or vinylidene halide is copolymerized with another comonomer in an aqueous medium containing an emulsifier and a long chain alcohol and initiated by a radical initiator. The copolymer product can be prepared by the intermittent polymerization of monomers. The copolymer in the state of a plastisol can be fused at low temperatures or in a shorter time than the normal grade, conventional vinyl copolymers. In order to prepare the vinyl copolymer, an emulsification system is employed in which an emulsifier is present in the aqueous medium, such as a salt of a long chain fatty acid, and a long straight chain saturated alcohol. Examples of the alcohol are disclosed in column 3 of the patent. The alcohol is said to increase the colloidal stability of the polymerization system and to reduce the amount of coagulum in the copolymer latex. Upon isolation of the product polymer, it is combined with a plasticizer to form a plastisol. There is no teaching or suggestion of a method of preparing a core/shell (meth)acrylate copolymer which is useful as an impact modifier that is produced under the desirable condition of having a low coagulate content. Withdrawal of the rejection is respectfully requested.

Claim 32 stands rejected based on 35 USC 103(a) as obvious over Hofmann in view of De Witt and further in view of Falk et al, U. S. Patent 4,542,179. This ground of rejection is respectfully traversed.

The subject matter of Claim 32 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend. Claim 32 is directed to a specific styrene/acrylonitrile copolymer which is employed as the styrene/acrylonitrile copolymer component of the molding composition of Claim 30 which also contains, as a component, the core/shell polymer particles as claimed in Claim 29 that are produced from the low coagulate containing core/shell polymer produced by the process of Claim 18.

The Examiner is correct in observing that neither Hofmann nor DeWitt shows or suggests the use of a styrene/acrylonitrile copolymer in a molding composition.

As to Falk et al, disclosed is a thermoplastic composition that is comprised of a blend acrylic sequential graft copolymer which has a core/shell structure and a SAN copolymer. The reference in column 4 describes a method of preparing core/shell compositions under emulsion polymerization conditions. Nothing is said in the patent of the preparation of a core/shell copolymer which should have a low coagulate content. Accordingly, the combined references do not suggest the claimed aspects of the present invention, and withdrawal of the rejection is respectfully requested.

Claim 33 stands rejected based on 35 USC 103(a) as obvious over Hofmann in view of De Witt and further in view of Shah et al, U. S. Patent 5,777,034. This ground of rejection is respectfully traversed.

The subject matter of Claim 33 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 32 stands rejected based on 35 USC 103(a) as obvious over Hofmann in view of Takarabe et al and further in view of Falk et al, U. S. Patent 4,542,179. This ground of rejection is respectfully traversed.

The subject matter of Claim 32 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend as stated above. Further, for similar reasons the combination of Falk et al with Hofmann and Takarabe et al does not suggest the present invention. Withdrawal of the rejection is respectfully requested.

Claim 33 stands rejected based on 35 USC 103(a) as obvious over Hofmann et al in view of Takarabe et al and further in view of Shah et al, U. S. Patent 5,777,034. This ground of rejection is respectfully traversed.

The subject matter of Claim 33 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend as stated above. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 32 stands rejected based on 35 USC 103(a) as obvious over Hofmann in view of Morningstar et al and further in view of Falk et al, U. S. Patent 4,542,179. This ground of rejection is respectfully traversed.

The subject matter of Claim 32 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend as stated above. Further, for similar reasons the combination of Falk et al with Hofmann and Morningstar et al does not suggest the present invention. Withdrawal of the rejection is respectfully requested.

Claim 33 stands rejected based on 35 USC 103(a) as obvious over Hofmann et al in view of Morningstar et al and further in view of Shah et al, U. S. Patent 5,777,034. This ground of rejection is respectfully traversed.

The subject matter of Claim 33 is directed to a secondary aspect of the invention upon which patentability of the invention does not depend as stated above. Accordingly, withdrawal of the rejection is respectfully requested.

Appln. No. 10/539,132
Reply to the Office Action of October 6, 2008

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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